

The season's first big race
is already over.



Chuck Sun
1980 National Open Class Champion

1981 Honda Motocrossers.

So fast, you won't believe how far they've come in just one year.

Before your racing season even begins, one race has ended. The technology race. The race to conceive and perfect the advances that will mean winning or losing during the production racing season.

Fortunately for Honda and Honda riders, this has been a very good year.

Andre Malherbe won the Open Class World Championship on a Honda. The second consecutive Honda rider to do it. Chuck Sun won the 500 cc U.S. National Championship on a Honda. And the legendary Roger DeCoster contributed to the development work that made sure the production bikes you race are as close as practical to the World Championship bikes Honda races.

Now all these champions and championships don't guarantee that you'll win if you race a Honda. But judging from the results so far, you'll stand a lot better chance if you do.

CR450R. Built to break the Open Class wide open.

Take the World Championship machine of Andre Malherbe. Add to it Chuck Sun's American Championship ride. Put them both in the hands



of five times World Champion Roger DeCoster and what do you come up with?

The 1981 CR450R.

An engine derived from the works RC500, powerful and reliable enough to win the world's two premier motocross series. But not just sheer power. Usable power from reed induction. A wide powerband. A torque curve flat as the Great Plains. The kind of power that wins races.

That power is wrapped in a new semi-double cradle chrome-moly frame direct from Honda racing development. With 41 mm leading axle, air assisted oil/spring forks for 12 inches of wheel travel. And a lightweight double leading shoe front brake.



In the rear is Honda's incredible Pro-Link™ suspension with truly progressive spring and damping rates to keep the power on the ground. From the whoops at the Citadel to the jumps at Carlsbad.

The CR450R. Built to be just what its predecessor, the RC500, is. A world beater.

CR250R. If you're not racing one, you'll probably be left high and dry.

The CR250R with Pro-Link suspension could very well be the best handling motocrosser you've ever ridden. A massive rear shock mounted on a unique linkage system allows the suspension to vary the spring and damping rates as terrain and speed change. Softer rates for smaller bumps. Higher rates for larger. Combined with new, 41 mm leading axle, air assisted forks and a new design semi-double cradle frame, the CR250R has to be ridden to be believed.

The engine is water-

cooled. Because an air-cooled two-stroke racing engine can lose up to 30% of its power during the first 20 minutes of a moto. And in a 250 class machine, that's a lot of power. The CR250R's lightweight, easily serviced water-cooling system minimizes power fade. And over the long run, decreases engine wear. And that's good. Because the CR250R has come so far so fast, it'll probably be running out front for some time to come.



CR125R. Just add water and start cookin'.

The CR125R is a completely new machine, designed from the knobbies up to turn the competition inside out.

The engine is water-cooled. For maximum power at the start of a race. And minimum power loss as the race goes on. Two aluminum radiators are mounted high to keep them out of the path of rocks and mud and so that the weight, minimal though it is, is on the steering axis as in some other systems.

Pro-Link rear suspension, like that on the Honda works bikes, provides truly progressive spring and damping rates, and is easily adjustable for varying track conditions.

Front suspension features 38 mm leading axle, air assisted front forks with 11.6 inches of wheel travel. Even the lightweight works style polyurethane fuel tank, fenders and side panels are all new for 1981.

The water-cooled, Pro-Link CR125R. This year, 125 class motocross will be a whole new ballgame.



Before you can win on the track, Honda has to win in the lab.

A lot of motocross races are won or lost long before the starting gate even drops. They're won in research and development. In the technological scramble. In the lab.

By the time the year's production run begins, what you see is pretty much what you get.

As in any race, there can be only one winner. When you've examined this year's Honda motocross machines, when you've ridden and won on one, or when you've been beaten by one you'll know who the winner was for 1981.

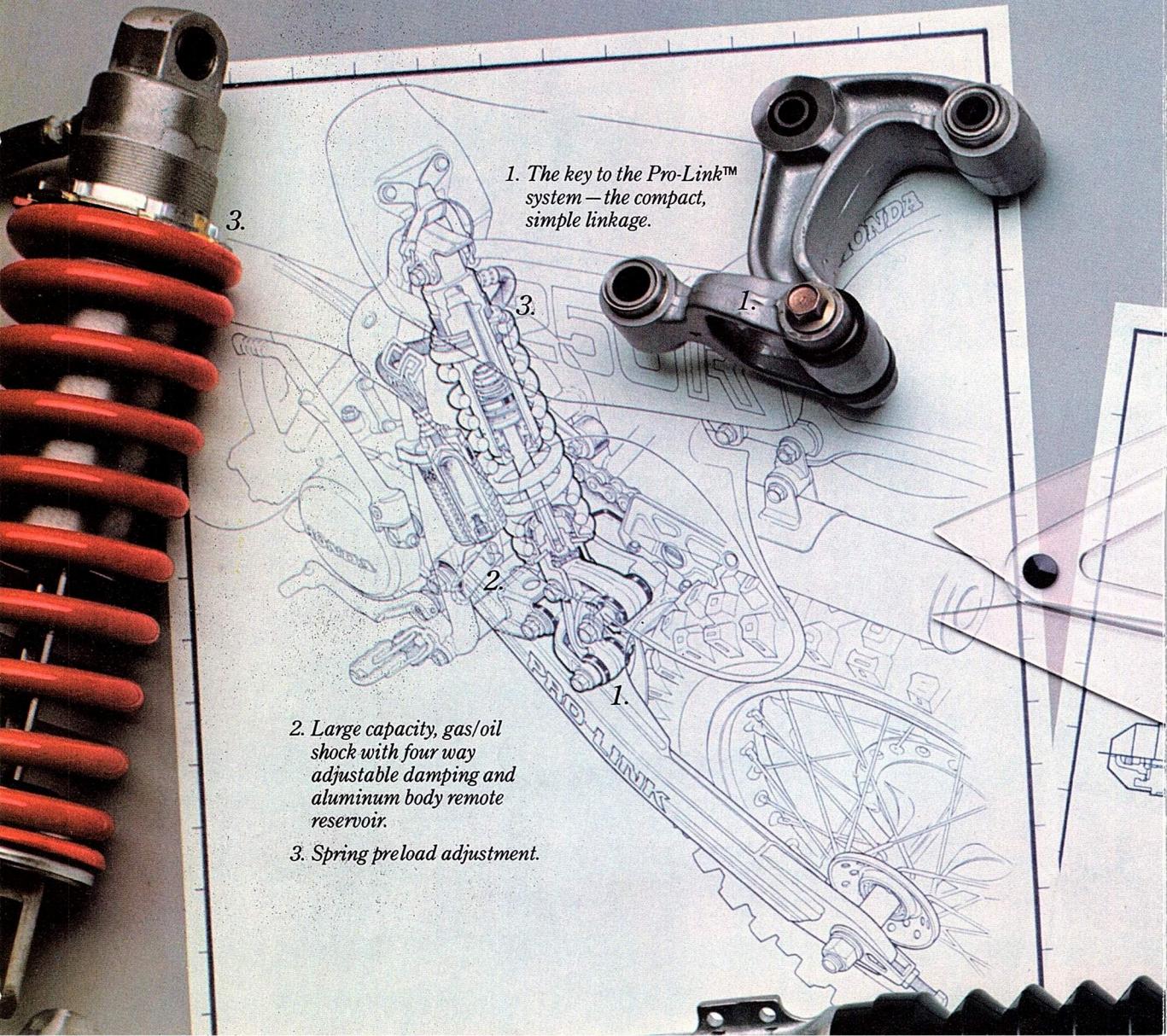
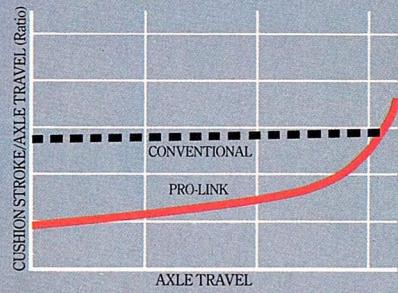
Pro-Link™ suspension.

There's nothing new about single shock suspensions. They've literally been around for generations.

What is new is the way in which Honda's Pro-Link suspension delivers truly progressive spring and damping characteristics. Which in turn means that ride and handling are improved throughout the motorcycle's competition performance range.

The key to the Pro-Link system is the unique linkage to which the massive single

shock is mounted. Conventional single and dual shock systems have a fixed ratio of shock piston speed to swing arm and rear wheel movement. The Pro-Link ratio is both variable and progressive. The further the alloy swing arm and wheel



move, the faster the shock piston travels, resulting in progressively higher damping rates.

The Pro-Link system provides lighter initial rates for small bumps, and progressively heavier rates for bigger bumps or jumps. So it keeps the power on the ground where it belongs.

Honda's easily adjustable Pro-Link system is the system best capable of providing just the right amount of suspension throughout the entire spectrum of racing performance.

The result is better handling, easier to ride motocross racing machines. And that's what it's all about.

A very trick shifter.

You've seen shift lever tips that fold back on impact. But have you ever seen one as neat as this design straight off the Honda works bikes? A super strong rubber tendon runs through the hollow aluminum shift lever to snap the tip back when the pressure on it is released. It's a small detail,

sure. But the kind of detail that wins or loses races.

Kick start pivot seals.

Sometimes when a bike is dumped, the kick start pivot becomes jammed with track dirt. So you waste precious seconds unjamming it. But on the 1981 CR125R, the forged aluminum kick starter has unique pivot seals which keep out the dirt in the first place. And that's something you can't kick about.

Case coring.

Everybody knows that the less weight you carry around the track the better. But did you know that Honda actually cores the engine side covers to reduce that weight? It's a fact.

C.D. Ignition

Capacitor discharge ignition produces the hot, reliable spark you need on the track. And, since the ignition advance curve is of major importance in determining the power output of a highly-tuned two-stroke engine, it is crucial

that this curve calibration be as close to optimum as possible.

So Honda doesn't just build one CDI and bolt it onto whatever engine comes along. The CR450R engine uses an outer rotor ignition, for increased flywheel effect which is desirable in a bike with lots of power and a four-speed transmission. The smaller, water-cooled engines utilize inner rotor ignitions to minimize flywheel effect.

The semi-double cradle frame.

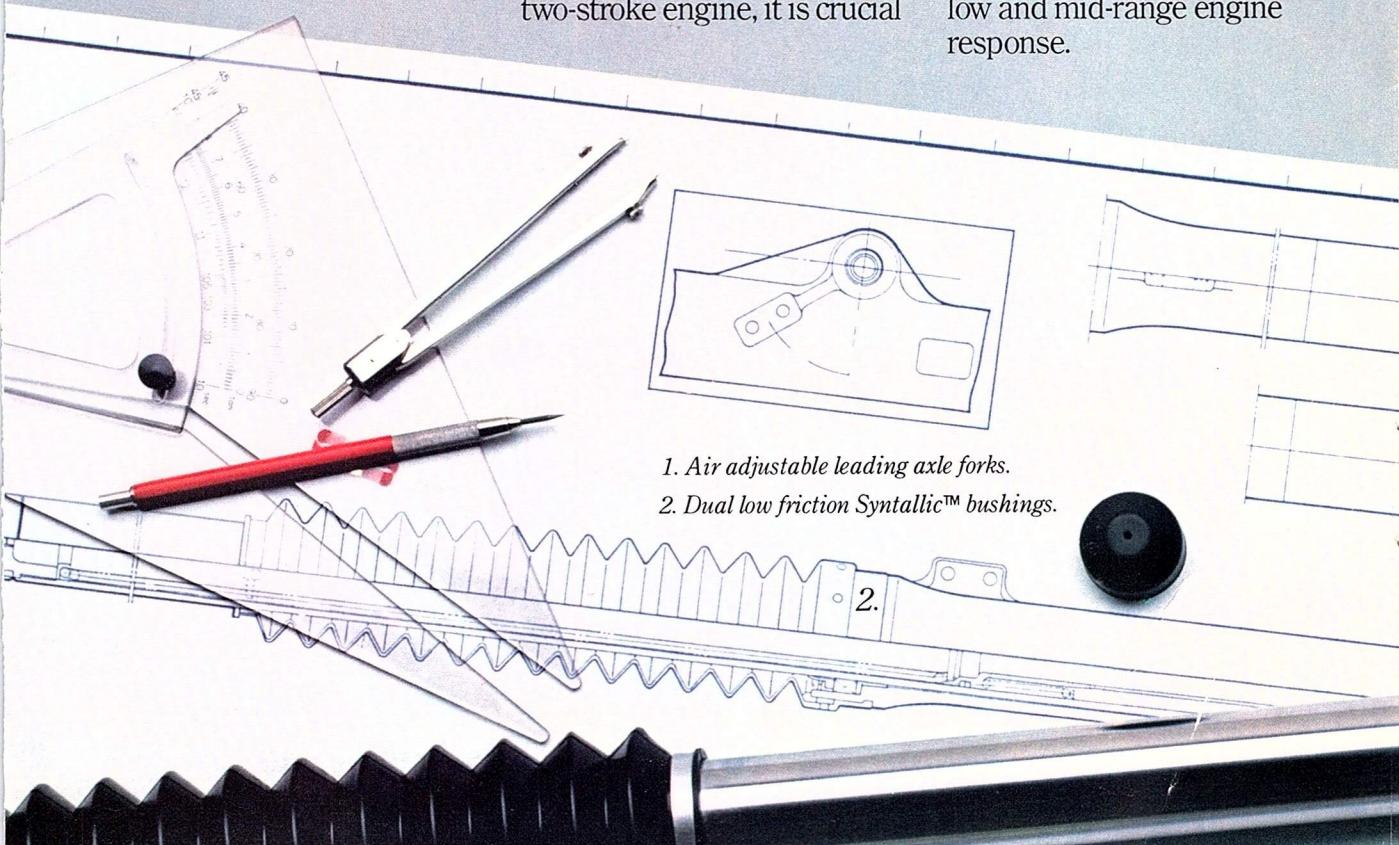
The semi-double cradle frame offers higher rigidity than single downtube frames and less weight than a full double cradle. The frame's wishbone configuration allows the use of a center port cylinder and lets the upswept expansion chamber tuck in close to the main downtube for extra clearance.

Grid Pattern Reed Valve.TM

Intake induction is controlled by Honda's exclusive lightweight grid pattern embossed reed valve for quicker low and mid-range engine response.

1. Air adjustable leading axle forks.

2. Dual low friction SyntalicTM bushings.



Large diameter, air assisted leading axle front forks.

With front forks, bigger is generally better. So the CR125R is fitted with 38 mm diameter tubes and the CR250R and CR450R with 41 mm. All are air adjustable to help in tuning the handling to various track conditions. And all are leading axle which increases wheel travel. In addition, this design allows more overlap between the fork tubes, which means less fork flex.

Dual low friction Syn-tallic™ bushings minimize static friction and provide smooth action through the full range of wheel travel.

Tapered roller steering head bearings.

The steering head has to contend with two types of load; axial (thrust) and radial (rolling). The tapered roller bearing is designed to handle any combination of these loads. The result is smoother steering, better reliability than ball bearings and minimal maintenance. A Honda CR racing machine deserves no less.

Double leading shoe front brake.

Conventional drum brakes are very simple.

As pressure is exerted on the brake lever, the brake cam is turned, forcing the shoes against the surrounding drum. With a single cam, the leading edge of one shoe and the trailing edge of the other are forced into contact with the drum.

The Honda double leading shoe brake uses a linkage system and two cams to force the shoes apart at two points simultaneously so you have two leading shoes instead of one. And more braking power.

Water-cooling. How it works.

There are several approaches to water-cooling motocross engines, all with the same goal. Increased power and reliability through controlled temperatures.

The Honda water-cooling system is derived from works bike technology. Raced and refined by the factory team, it works simply and very efficiently. A small water pump is gear driven from the crank-

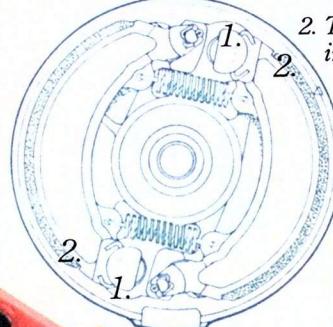
shaft. The pump feeds water through a contoured rubber hose and enters the jacketed cylinder near the intake port. So the intake charge is cooler and denser.

The water circulates through the cylinder jacket to the transfer and exhaust port areas absorbing combustion heat and effectively regulating cylinder expansion. The water passes through the cylinder head, reducing head temperatures, and then through a second preformed hose into two connected aluminum radiators. There, heat is dissipated into the air and the water returns to the pump.

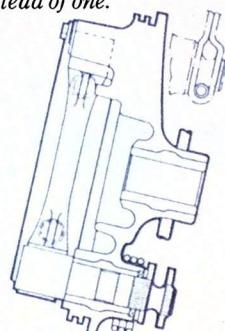
The radiators are mounted on the front of the fuel tank behind the steering head for two reasons. First to keep unnecessary weight, which can adversely effect handling, off the steering head. And second, so that the radiators can be protected against flying rocks, mud, etc. by plastic shrouds, screens and their high position.

Maintenance of the engine is simple since a single drain plug releases the water from the system and the absence of cooling fins allows easy access to both cylinder and head fasteners.

1. Two cams and linkage force shoes apart simultaneously.



2. Two leading edges instead of one.



And why you need it.

Heat is a two-stroke motocross engine's worst enemy.

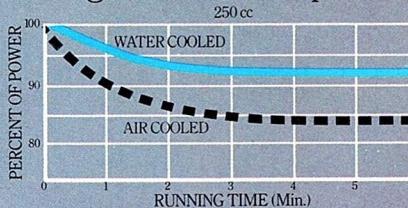
During the first 20 minutes of a moto, an air-cooled competition engine can lose nearly 30% of its peak horsepower due to heat distortion of engine components. And that same heat takes its toll on engine parts durability, too.

Water-cooling stabilizes the running temperature of the engine. So power loss is greatly reduced.

On a 125 class machine,

the difference in power after 20 minutes of racing can be vital — over 20%. Think what you could do with 20% more horsepower towards the end of a race.

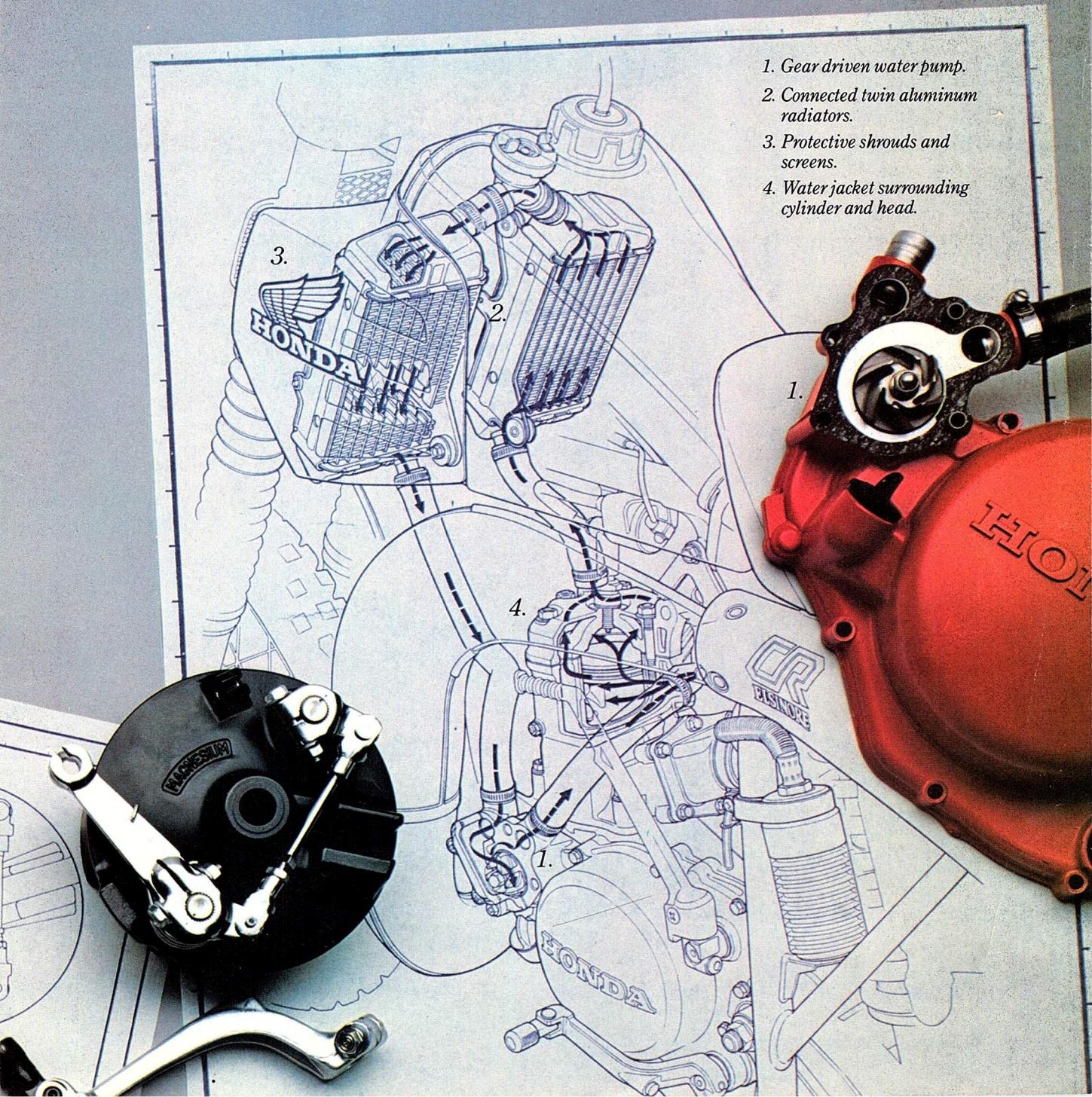
On a 250 class machine, water-cooling is just as important. Because power stays up throughout the entire rpm



range, performance is more consistent throughout the moto. And any rider can benefit from predictable, reliable power when he needs it.

As a long term advantage, Honda's easy-to-maintain water-cooling could substantially decrease engine wear, increase engine life.

More power, more durability. At almost no increase in weight. If you're not running a water-cooled CR in the 125 and 250 class this season, you're gonna be all wet.



1981 Specifications

	CR125R	CR250R	CR450R
Engine	122 cc water-cooled two-stroke single	246 cc water-cooled two-stroke single	431 cc air-cooled two-stroke single
Bore and Stroke	55.5 mm x 50.7 mm	66 mm x 72 mm	85 mm x 76 mm
Compression Ratio	8.2:1	7.5:1	7.1:1
Carburetor	34 mm piston valve	36 mm piston valve	38 mm piston valve
Ignition	Capacitor discharge	Capacitor discharge	Capacitor discharge
Starter	Primary kick	Primary kick	Primary kick
Transmission	Six-speed	Five-speed	Four-speed
Width	33.9 inches	33.9 inches	33.9 inches
Height	47.4 inches	49.6 inches	48.0 inches
Seat Height	37.4 inches	37.6 inches	37.8 inches
Ground Clearance	13.8 inches	12.6 inches	13.0 inches
Wheelbase	56.5 inches	58.5 inches	59.4 inches
Tires	Front: 3.00-21 motocross Rear: 4.00-18 motocross	Front: 3.00-21 motocross Rear: 5.10-18 motocross	Front: 3.00-21 motocross Rear: 5.10-18 motocross
Suspension	Front: Air assisted, leading axle hydraulic forks, 11.6 inch wheel travel Rear: Pro-Link™ gas/oil shock with remote reservoir, 11.6 inch wheel travel	Front: Air assisted, leading axle hydraulic forks, 12 inch wheel travel Rear: Pro-Link™ gas/oil shock with remote reservoir, 12 inch wheel travel	Front: Air assisted, leading axle hydraulic forks, 12 inch wheel travel Rear: Pro-Link™ gas/oil shock with remote reservoir, 12.3 inch wheel travel
Fuel Tank	Plastic with large filler cap	Plastic with large filler cap	Plastic with large filler cap
Fuel Capacity	1.7 gallons	2 gallons	2.4 gallons
Dry Weight	200.7 pounds	224.9 pounds	229.3 pounds

Andre Malherbe
1980 World Open Class Champion



HONDA
FOLLOW THE LEADER

ALWAYS WEAR A HELMET AND EYE PROTECTION. Designed for operator use only. CRs are designed for motocross use only and are sold "AS IS" without warranty. Specifications and availability subject to change without notice. ©1981 American Honda Motor Co., Inc. For a free brochure, see your Honda dealer. Or write: American Honda Motor Co., Inc. Dept. 402, Box 9000, Van Nuys, California 91409.